Version 1.2

Sustainable Project Rating Tool

U. S. Army Corps of Engineers
U. S. Army Assistant Chief of Staff for Installation Management

August 2000

Introduction

All Federal Agencies have been directed by Executive Order to develop and adopt principles of Sustainable Design and Development (SDD). The Army has directed USACE to adopt sustainabile design and development practices in the design and construction of Army facilities. Headquarters, U. S. Army Corps of Engineers (HQUSACE) has published guidance on appropriate SDD practices in ETL 1110-3-491, Engineering and Design, SUSTAINABLE DESIGN FOR MILITARY FACILITIES, 30 June 1998, to incorporate concepts of sustainability and latest requirements. HQUSACE has also updated Corps of Engineers Guide Specifications to reflect 'Green Building' criteria under the 'Green Building Criteria Update Program' and and will continue to update more as funding is made available. In order to help USACE Districts bench mark their accomplishments, USACE and ACSIM have jointly developed this Sustainable Project Rating Tool (SPRT). All projects shall be scored by SPRT and designers should strive to acheve Bronze level as described by SPRT. If designers are unable to achieve the Bronze level, the District PM shall send an email to
Mr. Harry Goradia providing reasons why such level can not be achieved. These emails will provide HQUSACE insight for the future actions as they may relate to funding, policies, customer participation, schdules etc.

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Content

NOTES

1) This Sustainable Project Rating Tool is derived from The U. S. Green Building Council LEED 2.0 (Leadership in Energy and Environmental Design) Green Building Rating SystemTM.
2) The SPRT criteria numbering scheme parallels, but does not match LEED 2.0. LEED does not number major sections, e.g. 'Sustainable sites, rather it numbers criteria within each major section. SPRT criteria numbers match of LEED where there is a 1:1 comparison. Where additional criteria have been added they fall at the end of major sections. SPRT paragraph numbers are formatted as follows for comparison to LEED:

1.C.7 Criteria adopted from LEED without modification.
1.C.2 * Criteria adopted from LEED with modification.
1.C.9 ** New Criteria for SPRT

3) The SPRT criteria all follow the format: Intent, Requirement and Technologies/Strategies.
Intent: A statement of the primary goal for the criterion;
Requirement: Quantifiable conditions necessary to achieve stated intent;
Technologies/Strategies: Suggested technologies, strategies and referenced guidance on the means to achieve identified requirements.
4) Projects are evaluated for each SPRT criterion which are either 'Prerequisites' or result in a point score.
Prerequisites: These criterion are a statement of minimum requirements and must be met. No further points will be awarded unless the minimum is achieved. These criterion are recognizable by an 'R' in the number scheme, ex. 1.R1, and a 'Reqd.' in the score column.
Point Score: These criterion are evaluated and result in a point score. Where the potential score is greater than 1, no partial points are granted.
5) SPRT Sustainable Project Certification Levels:

SPRT Bronze	25 to 34 Points
SPRT Silver	35 to 49 Points
SPRT Gold	50 to 74 Points
SPRT Platinum	75 to 100 Points

6) SPRT criteria have been developed to address facility life cycle phases including programming, design, construction and commissioning. Additional rating tools will be developed to address installation master planning and facilities operations and maintenance, rehabilitation, recycling, and disposal.
7) POC for comment is Mr. Harry Goradia, U. S. Army Corps of Engineers, CEMP-ET, 7701 Telegraph Road, Alexandria, VA 22315-3862, Phone 703-428-6460, FAX 703-428-7903, Email harry.goradia@hq02.usace.army.mil.
Alternate POC is Mr. John Scharl, U. S. Army Assistant Chief of Staff for Installation Management, ATTN: DAIM-FDF-M, 7701 Telegraph Road, Casey Building, Alexandria, VA 22315-3862, Phone (703) 428-7614, FAX (703) 428-0197, Email scharja@hqda.army.mil.
8) Sustainable Project Rating Tool (SPRT) Authors are:
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1.0 Sustainable Sites — Score 20

1.R1 Erosion, Sedimentation and Water Quality Control — Reqd.

Intent: Control erosion and pollutants to reduce negative impacts on water and air quality.

Requirement: Design a site sediment and erosion control plan and a pollution prevention plan that conforms to best management practices in the EPA's Storm Water Management for Construction Activities, EPA Document No. EPA-833-R-92-001, Chapter 3, OR local Erosion and Sedimentation Control standards and codes, whichever is more stringent. The plan shall meet the following objectives:

- Prevent loss of soil during construction by storm water runoff and/or wind erosion, including protecting topsoil by stockpiling for reuse.
- Prevent sedimentation of storm sewer or receiving streams and/or air pollution with dust and particulate matter.
- Prevent hazardous material discharge into storm water systems.
- Prevent petroleum oils and lubricants (POL) discharge into storm water systems.

Technologies /Strategies: The EPA standard lists numerous measures such as silt fencing, sediment traps, oil grit separators, construction phasing, stabilization of steep slopes, maintaining vegetated ground cover and providing ground cover that will meet this prerequisite.

1.C1 Site Selection

Intent: Avoid development of inappropriate sites and reduce the environmental impact from the location of a building on a site. Select site based on functional adjacencies/relationships and land use compatibility.

Requirement: Do not develop buildings on portions of sites that meet any one of the following criteria: **1**

- Prime training or maneuver land.
- Land whose elevation is lower than 5 ft. above the 100-year flood elevation as defined by FEMA.
- Land that provides habitat for any species on the Federal or State threatened or endangered list.
- Within 100 feet of any wetland as defined by 40 CFR, Parts 230-233 and Part 22, OR as defined by local or state rule or law, whichever is more stringent.

Select site based on functional adjacencies/relationships and land use compatibility. **1**

- Select sites close to existing roads and utilities or use an existing structure to minimize the need for new infrastructure.
- Select site in area of high density.
- Site facilities based on the strength of their relationships to other facilities/land-uses to limit travel distances. The stronger the relationship/functional interaction, the closer the distance between two facilities.
- Select for distance to installation transit systems and access to pedestrian ways and bike paths.
- Select for development previously used or developed suitable and available sites.

Technologies /Strategies: Screen potential building sites for these criteria and/or ensure that these criteria are addressed by the designer during the conceptual design phase. Utilize landscape architects, ecologists, environmental engineers, civil engineers, and similar professionals for the screening process. New wetlands constructed as part of stormwater mitigation or other site restoration efforts are not affected by the restrictions of this prerequisite.

1.C2 Installation Redevelopment

Intent: Channel development to installation cantonment areas with existing infrastructure, protecting greenfields and preserving habitat and natural resources.

Requirement: Increase localized density to conform to existing or desired density goals by utilizing sites that are located within an existing minimum development density of 60,000 square feet per acre (2 story downtown development). **1**

Select sites close to existing roads and utilities or use an existing structure to minimize the need for new infrastructure. **1**

Technologies /Strategies: During the site selection process give preference to previously developed sites with installation cantonment redevelopment potential such as facility reduction program cleared sites.

1.0 Sustainable Sites (Continued)

1.C3 Brownfield Redevelopment

Intent:	Rehabilitate damaged sites where development is complicated by real or perceived environmental contamination, reducing pressure on undeveloped land.	
Requirement:	Develop on a site classified as a brownfield and provide remediation as required by EPA's Brownfield Redevelopment program requirements OR Develop a brownfield site (a site that has been contaminated by previous uses).	1
Technologies /Strategies:	Screen potential damaged sites for these criteria prior to selection for rehabilitation.	

1.C4 Alternative Transportation

Intent:	Reduce pollution and land development impacts from automobile use.	
Requirement:	Locate building within ½ mile of installation transit systems.	1
	Provide suitable means for securing bicycles, with convenient changing/shower facilities for use by cyclists, for 5% or more of building occupants.	1
	Locate building within 2 miles of alternative-fuel refueling station(s).	1
	Size parking capacity not to exceed minimum installation cantonment requirements AND provide preferred parking for carpools or van pools capable of serving 5% of the building occupants, OR, add no new parking for rehabilitation projects AND provide preferred parking for carpools or van pools capable of serving 5% of the building occupants.	1
Technologies /Strategies:	Select sites near installation transit served by safe, convenient pedestrian pathways.	

1.C5 Reduced Site Disturbance

Intent:	Conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity.	
Requirement:	On greenfield sites, limit site disturbance including earthwork and clearing of vegetation to 40 feet beyond the building perimeter, 5 feet beyond primary roadway curbs, walkways, and main utility branch trenches, and 25 feet beyond pervious paving areas that require additional staging areas in order to limit compaction in the paved area; OR, on previously developed sites, restore a minimum of 50% of the remaining open area by planting native or adapted vegetation.	1
	Reduce the development footprint (including building, access roads and parking) to exceed the local zoning's open space requirement for the site by 25% or in accordance with installation policy on open space set asides, whichever is greater.	1
Technologies /Strategies:	Note requirements on plans and in specifications. Establish contractual penalties for destruction of trees and site areas noted for protection. Reduce footprints by tightening program needs and stacking floor plans. Establish clearly marked construction and disturbance boundaries. Delineate laydown, recycling, and disposal areas. Use areas to be paved as staging areas. Work with local horticultural extension services or native plant societies to select indigenous plant species for site restoration and landscaping.	

1.C6 Stormwater Management

Intent:	Limit disruption of natural water flows by minimizing storm water runoff, increasing on-site infiltration and reducing contaminants.	
Requirement:	Implement a stormwater management plan that results in:	
	No net increase in the rate or quantity of stormwater runoff from existing to developed conditions; OR, if existing imperviousness is greater than 50%, implement a stormwater management plan that results in a 25% decrease in the rate and quantity of stormwater runoff.	1
	Treatment systems designed to remove 80% of the average annual post development total suspended solids (TSS), and 40% of the average annual post development total phosphorous (TP), by implementing Best Management Practices (BMPs) outlined in EPA's Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters (EPA 840-B-92-002 1/93).	1
Technologies /Strategies:	Significantly reduce impervious surfaces, maximize on-site stormwater infiltration, and retain pervious and vegetated areas. Capture rainwater from impervious areas of the building for groundwater recharge or reuse within building. Use green/vegetated roofs. Utilize biologically-based and innovative stormwater management features for pollutant load reduction such as constructed wetlands, stormwater filtering systems, bioswales, bio-retention basins, and vegetated filter strips. Use open vegetated swales to reduce drainage velocity and erosion, reduce system maintenance, increase vegetative variety and support wildlife habitat where space permits.	

1.0 Sustainable Sites (Continued)

1.C7 Landscape and Exterior Design to Reduce Heat Islands

Intent: Reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impact on microclimate and human and wildlife habitat.

Requirement: Provide shade (within 5 years) on at least 30% of non-roof impervious surface on the site, including parking lots, walkways, plazas, etc., OR, use light-colored/ high-albedo materials (reflectance of at least 0.3) for 30% of the site's non-roof impervious surfaces, OR place a minimum of 50% of parking space under-ground OR use open-grid pavement system (net impervious area of LESS than 50%) for a minimum of 50% of the parking lot area. **1**

Use ENERGY STAR Roof compliant, high-reflectance AND low emissivity roofing (initial reflectance of at least .65 and three-year-aged reflectance of at least .5 when tested in accordance with ASTM E408) for a minimum of 75% of the roof surface; OR, install a "green" (vegetated) roof for at least 50% of the roof area. **1**

Technologies /Strategies: Employ design strategies, materials, and landscaping designs that reduce heat absorption of exterior materials. Note albedo/reflectance requirements in the drawings and specifications. Provide shade (calculated on June 21, noon solar time) using native or climate tolerant trees and large shrubs, vegetated trellises, or other exterior structures supporting vegetation. Substitute vegetated surfaces for hard surfaces. Explore elimination of blacktop and the use of new coatings and integral colorants for asphalt to achieve light colored surfaces.

1.C8 Light Pollution Reduction

Intent: Eliminate light trespass from the building site, improve night sky access, and reduce development impact on nocturnal environments.

Requirement: Do not exceed Illuminating Engineering Society of North America (IESNA) footcandle level requirements as stated in the Recommended Practice Manual: Lighting for Exterior Environments, AND design interior and exterior lighting such that zero direct-beam illumination leaves the building site. **1**

Technologies /Strategies: Consult IESNA Recommended Practice Manual: Lighting for Exterior Environments for Commission Internationle de l'Eclairage (CIE) zone and pre and post curfew hour descriptions and associated ambient lighting level requirements. Ambient lighting for pre-curfew hours for CIE zones range between .01 footcandles for areas with dark landscapes such as parks, rural, and residential areas, and 1.5 footcandles for areas with high ambient brightness such as installation urban areas with high levels of nighttime activity. Design site lighting and select lighting styles and technologies to have a minimal impact off-site and minimal contribution to sky glow. Minimize lighting of architectural and landscape features. Exterior lighting should be consistent with security lighting requirements.

1.C9 Optimize Site Features

Intent: Optimize utilization of the site's existing natural features and placement of man-made features on the site.

Requirement: Perform both of the following: **1**

- Maximize the use of free site energy.
- Plan facility, parking and road-ways to "fit" existing site contours and limit cut and fill.

Technologies /Strategies: Evaluate site resources to ascertain how each can enhance the proposed project and visa versa. Work to maximum advantage of the site's solar and wind attributes. Use landscaping to optimize solar and wind conditions and to contribute to energy efficiency; Locate and orient the facility on the site to optimize solar and wind conditions.

1.C10 Facility Impact

Intent: Minimize negative impacts on the site and on neighboring properties and structures; avoid or mitigate excessive noise, shading on green spaces, additional traffic, obscuring significant views, etc.

Requirement: Cluster facilities to reduce impact, access distance to utilities and sufficient occupant density to support mass transit. **1**

Collaborate with installation and community planners to identify and mitigate potential impacts of the project beyond site boundaries, and transportation planners to insure efficient public transport. **1**

Technologies /Strategies: Involve local/regional planners and community members in installation master planning processes. Recognize the context and the impact of a project beyond site boundaries, and integrate it with the larger installation/community context/land use.

1.0 Sustainable Sites (Continued)

1.C11	**Site Ecology**	
Intent:	Identify and mitigate all existing site problems including contamination of soil, water, and air, as well as any negative impacts caused by noise, eyesores, or lack of vegetation.	
Requirement:	Develop site environmental management and mitigation plan.	**1**
Technologies /Strategies:	Understand site and surrounding ecosystem interdependence and interconnectivity. Plan landscaping scheme to incorporate biodiversity. Preserve/enhance existing trees, hydrological features, ecosystems, habitats, and cultural resources. Increase the existence of healthy habitat for native species. Reintroduce native plants and trees where they have been destroyed by previous development.	

2.0 Water Efficiency — Score 5

2.C1 Water Efficient Landscaping

Intent:	Limit or eliminate the use of potable water for landscape irrigation.	
Requirement:	Use high efficiency irrigation technology, OR, use captured rain or recycled site water to reduce potable water consumption for irrigation by 50% over conventional means.	1
	Use only captured rain or recycled site water for an additional 50% reduction (100% total reduction) of potable water for site irrigation needs, OR, do not install permanent landscape irrigation systems.	1
Technologies /Strategies:	Specify water-efficient, native or adapted, climate tolerant plantings. High efficiency irrigation technologies include micro irrigation, moisture sensors, or weather data based controllers. Feed irrigation systems with captured rainwater, gray water, or on-site treated wastewater.	

2.C2 Innovative Wastewater Technologies

Intent:	Reduce generation of wastewater and potable water demand, while increasing local aquifer recharge.	
Requirement:	Reduce the use of municipally provided potable water for building sewage conveyance by a minimum of 50%, OR, treat 100% of wastewater on site to tertiary standards.	1
Technologies /Strategies:	Develop a wastewater baseline according to the methodology outlined in the LEED Reference Guide. Implement decentralized on-site wastewater treatment and reuse systems. Decrease the use of potable water for sewage conveyance by utilizing gray and/or black water systems. Non-potable reuse opportunities include, toilet flushing, landscape irrigation, etc. Provide advanced wastewater treatment after use by employing innovative, ecological, on-site technologies including constructed wetlands, a mechanical recirculating sand filter, or aerobic treatment systems.	

2.C3 Water Use Reduction

Intent:	Maximize water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems.	
Requirement:	Employ strategies that in aggregate use 20% less water than the water use baseline calculated for the building (not including irrigation) after meeting Energy Policy Act (EPACT) of 1992 fixture performance requirements.	1
	Employ strategies that in aggregate use 20% less water than the water use baseline calculated for the building (not including irrigation) after meeting Energy Policy Act of 1992 fixture performance requirements.	1
Technologies /Strategies:	Develop a water use baseline including all water consuming fixtures, equipment, and seasonal conditions according to methodology guidance outlined in the LEED Reference Guide. Specify water conserving plumbing fixtures that exceed Energy Policy Act of 1992 fixture requirements in combination with ultra high efficiency or dry fixture and control technologies. Specify high water efficiency equipment (dishwashers, laundry, cooling towers, etc.). Use alternatives to potable water for sewage transport water. Use recycled or storm water for HVAC/process make up water. Install cooling tower systems designed to minimize water consumption from drift, evaporation and blowdown.	

3.0 Energy and Atmosphere — Score 28

3.R1 Fundamental Building Systems Commissioning — Reqd.

Intent: Verify and ensure that fundamental building elements and systems are designed, installed and calibrated to operate as intended.

Requirement: Implement all of the following fundamental best practice commissioning procedures.

- Engage a commissioning authority.
- Develop design intent and basis of design documentation.
- Include commissioning requirements in the construction documents.
- Develop and utilize a commissioning plan.
- Verify installation, functional performance, training and documentation.
- Complete a commissioning report.

Technologies /Strategies: Introduce standards and strategies into the design process early, and then carry through selected measures by clearly stating target requirements in the construction documents. Tie contractor final payments to documented system performance. Refer to the LEED Reference Guide for detailed descriptions of required elements and references to additional commissioning guides. Specify pre-occupancy baseline IAQ testing at time of commissioning. Test for indoor air concentrations of CO, CO2 , total VOCs and particulates. Test to assure that adequate ventilation rates have been achieved prior to initial occupancy.

3.R2 Minimum Energy Performance — Reqd.

Intent: Establish the minimum level of energy efficiency for the base building and systems.

Requirement: Design to meet building energy efficiency and performance as required by TI800-01 (AEI).

Technologies /Strategies: Use building modeling and analysis techniques to establish and document compliance. ASHRAE/IESNA 90.1-1999 provides guidance for establishing building base case development and analysis.

Use a professionally recognized and proven computer program or programs that integrate architectural features with air-conditioning, heating, lighting, and other energy producing or consuming systems. These programs will be capable of simulating the features, systems, and thermal loads used in the design. Using established weather data files, the program will perform 8760 hourly calculations. BLAST, DOE-2 or EnergyPlus are acceptable programs for these purposes.

3.R3 CFC Reduction in HVAC&R Equipment — Reqd.

Intent: Reduce ozone depletion.

Requirement: Zero use of CFC-based refrigerants in new base building HVAC&R systems. When reusing existing base building HVAC equipment, complete a comprehensive CFC phaseout conversion.

Technologies /Strategies: Specify only non-CFC-based refrigerants in all base building HVAC&R systems.

3.0 Energy and Atmosphere (Continued)

3.C1 Optimize Energy Performance.

Intent: Achieve increasing levels of energy performance above the prerequisite standard to reduce environmental impacts associated with excessive energy use.

Requirement: Reduce design energy usage (DEU) compared to the energy use budget (EUB) in joules per square meter per year as described in the requirements of Chapter 11 of the TI 800-01, as demonstrated by a whole building simulation.

Reduction Beyond Minimum

New Construction	Existing Building	
10%	0%	**4**
20%	10%	**8**
30%	20%	**12**
40%	30%	**16**
50%	40%	**20**

Technologies /Strategies: Develop and use building modeling and analysis techniques to establish a base case that meets the minimum prerequisite standard. ASHRAE/IESNA 90.1-1999 provides guidance for establishing building base case development and analysis. Perform interactive energy use analysis for selected design elements that affect energy performance and document compliance.

Unit of measure for performance shall be annual energy usage in joules per square meter. Life-Cycle energy costs shall be determined using rates for purchased energy, such as electricity, gas, oil, propane, steam, and chilled water and approved by the adopting authority. Refer to the LEED Reference Guide or Whole Building Design Guide for a wide variety of energy efficiency resources and strategies including conservation measures, electromechanical energy efficiency technologies (for example ground-source heat pumps), passive heating and cooling strategies, solar hot water, and daylighting.

Life-Cycle costing will be done in accordance with 10 CFR 436.

Consider installation of an Energy Management and Control System (EMCS), which is compatible with exiting installation systems to optimize performance. Use sensors to control loads based on occupancy, schedule and/or the availability of natural resources use (day light or natural ventilation).

3.C2 Renewable Energy

Intent: Encourage and recognize increasing levels of self-supply through renewable technologies to reduce environmental impacts associated with fossil fuel energy use.

Requirement: Supply a net fraction of the building's total energy use through the use of on-site renewable energy systems.

% of Total Annual Energy Usage in Renewables	
5%	**1**
10%	**2**
20%	**3**

Technologies /Strategies: Employ the use of on-site non-polluting-source renewable technologies contributing to the total energy requirements of the project. Consider and use high temperature solar and/or geothermal, photovoltaics, wind, biomass (other than unsustainably harvested wood), and bio-gas. Passive solar, solar hot water heating, ground-source heat pumps, and daylighting do not qualify for points under this credit. Credit for these strategies is given in Energy & Atmosphere Credit 1: Optimizing Energy Performance.

3.0 Energy and Atmosphere (Continued)

3.C3 Additional Commissioning

Intent: Verify and ensure that the entire building is designed, constructed, and calibrated to operate as intended.

Requirement: In addition to the Fundamental Building Commissioning prerequisite, implement the following additional commissioning tasks: **1**

1. Conduct a focused review of the design prior to the construction documents phase.
2. Conduct a focused review of the construction documents when close to completion.
3. Conduct a selective review of contractor submittals of commissioned equipment.
4. Develop a system and energy management manual.
5. Have a contract in place for a near-warranty end or post occupancy review.

Items 1,2, and 3 must be performed by someone other than the designer.

Technologies /Strategies: Introduce standards and strategies into the design process early, and then carry through selected measures by clearly stating target requirements in the construction documents. Tie contractor final payments to documented system performance. Refer to the LEED Reference Guide for detailed descriptions of required elements and references to additional guidelines.

3.C4 Elimination of HCFC's and Halons

Intent: Reduce ozone depletion and support early compliance with the Montreal Protocol.

Requirement: Install base building level HVAC and refrigeration equipment and fire suppression systems that do not contain HCFC's or Halon. **1**

Technologies /Strategies: Utilize base building HVAC and refrigeration systems that use non ozone damaging liquids for the refrigeration cycle. Refer to the LEED Reference Guide for qualifying alternatives.

3.C5 Measurement and Verification

Intent: Provide for the ongoing accountability and optimization of building energy and water consumption performance over time.

Requirement: Comply with the installed equipment requirements for continuous metering as stated in Option B: Methods by Technology of the US DOE's International Performance Measurement and Verification Protocol (IPMVP) for the following: **1**

- Lighting systems and controls.
- Constant and variable motor loads.
- Variable frequency drive (VFD) operation.
- Chiller efficiency at variable loads (kW/ton).
- Cooling load.
- Air and water economizer and heat recovery cycles.
- Air distribution static pressures and ventilation air volumes.
- Boiler efficiencies.
- Building specific process energy efficiency systems and equipment.
- Indoor water risers and outdoor irrigation systems.

Technologies /Strategies: Design and specify equipment to be installed in base building systems to allow for comparison, management, and optimization of actual vs. estimated energy and water performance. Employ building automation systems to perform M&V functions where applicable. Tie contractor final payments to documented M&V system performance and include in the commissioning report. Provide for ongoing M&V system maintenance and operating plan in building operations and maintenance manuals. Consider installation of an Energy Management and Control System (EMCS) which is compatible with exiting installation systems to optimize performance.

3.0 Energy and Atmosphere (Continued)

3.C6 **Green Power**

Intent:	Encourage the development and use of grid-source, renewable energy technologies on a net zero pollution basis.	
Requirement:	Engage in a two year contract to purchase power generated from renewable sources that meet the Center for Resource Solutions (CRS) Green-E requirements.	**1**
Technologies /Strategies:	Purchase power from a provider that guarantees a fraction of its delivered electric power is from net nonpolluting renewable technologies. Begin by contacting local utility companies. If the project is in an open market state, investigate Green Power and Power Marketers licensed to provide power in that state. Grid power that qualifies for this credit originates from solar, wind, geothermal, biomass, or low-impact hydro sources. Low-impact hydro shall comply with the Low Impact Hydropower Certification Program.	

3.C7 **Distributed Generation**

Intent:	Encourage the development and use of distributed generation technologies which are less polluting than grid-source energy.	
Requirement:	Reduce total energy usage and emissions by considering source energy implications and local cogeneration and direct energy conversion.	**1**
Technologies /Strategies:	Investigate the use of integrated generation and delivery systems, such as co-generation, fuel cells, micro-turbines and off-peak thermal storage.	

4.0 Materials and Resources — Score 13

4.R1 Storage & Collection of Recyclables — Reqd.

Intent: Facilitate the reduction of waste generated by building occupants that is hauled to and disposed of in landfills.

Requirement: Provide an easily accessible area that serves the entire building that is dedicated to the separation, collection and storage of materials for recycling including (at a minimum) paper, glass, plastics, and metals .

Technologies /Strategies: Establish a waste management plan in cooperation with users to encourage recycling. Reserve space for recycling functions early in the building occupancy programming process and show areas dedicated to collection of recycled materials on space utilization plans. Broader recycling support space considerations should allow for collection and storage of the required elements and newspaper, organic waste (food and soiled paper), and dry waste. When collection bins are used, bin(s) should be able to accommodate a 75% diversion rate and be easily accessible to custodial staff and recycling collection workers. Consider bin designs that allow for easy cleaning to avoid health issues.

4.C1 Building Reuse

Intent: Extend the life cycle of existing building stock, conserve resources, retain cultural resources, reduce waste, and reduce environmental impacts of new buildings as they relate to materials manufacturing and transport.

Requirement: Reuse large portions of existing structures during renovation or redevelopment projects.

Maintain at least 75% of existing building structure and shell (exterior skin and framing excluding window assemblies).	1
Maintain an additional 25% (100% total) of existing building structure and shell (exterior skin and framing excluding window assemblies).	1
Maintain 100% of existing building structure and shell AND 50% non-shell (walls, floor coverings, and ceiling systems).	1

Technologies /Strategies: Evaluate retention of existing structure. Consider facade preservation, particularly in installation urban areas. During programming and space planning, consider adjusting needs and occupant use patterns to fit within existing building structure and interior partition configurations. Identify and effectively address energy, structural, and indoor environmental (lead & asbestos) issues in building reuse planning and deconstruction documents. Percentage of reused non-shell building portions will be calculated as the total area (s.f.) of reused walls, floor covering, and ceiling systems, divided by the existing total area (s.f.) of walls, floor covering, and ceiling systems.

4.C2 Construction Waste Management

Intent: Divert construction, demolition, and land clearing debris from landfill disposal. Redirect recyclable material back to the manufacturing process.

Requirement: Develop and implement a waste management plan, quantifying material diversion by weight.

Recycle and/or salvage at least 50% (by weight) of construction, demolition, and land clearing waste.	1
Recycle and/or salvage an additional 25% (75% total by weight) of the construction, demolition, and land clearing debris.	1

Technologies /Strategies: Develop and specify a waste management plan that identifies licensed haulers and processors of recyclables; identifies markets for salvaged materials; employs deconstruction, salvage, and recycling strategies and processes, includes waste auditing; and documents the cost for recycling, salvaging, and reusing materials. Source reduction on the job site should be an integral part of the plan

The plan should address recycling of corrugated cardboard, metals, concrete brick, asphalt, land clearing debris (if applicable), beverage containers, clean dimensional wood, plastic, glass, gypsum board, and carpet; evaluate the cost-effectiveness of recycling rigid insulation, engineered wood products and other materials; hazardous materials storage and management; and participation in manufacturers' “take-back” programs to the maximum extent possible. Refer to the LEED Reference Guide for guidelines and references that provide waste management plan development and implementation support including model bid specifications.

4.0 Materials and Resources (Continued)

4.C3 Resource Reuse

Intent: Extend the life cycle of targeted building materials, reducing environmental impacts related to materials manufacturing and transport.

Requirement: Specify salvaged or refurbished materials for 5% of building materials. **1**

Specify salvaged or refurbished materials for 10% of building materials. **1**

Technologies /Strategies: Commonly salvaged building materials include wood flooring/ paneling/cabinets, doors and frames, mantels, iron work and decorative lighting fixtures, brick, masonry and heavy timbers. See the LEED Reference Guide for calculation tools and guidelines. Determine percentages in terms of dollar value using the following steps:

1. Calculate total dollars* (see exclusions) of the salvaged or refurbished material.
2. Calculate total dollars (see exclusions) of all building materials.
3. Divide Step 1 by Step 2 to determine the percentage.

Exclusions: In total dollar calculations, exclude; labor costs; all mechanical and electrical material and labor costs; and project overhead and fees. *If the cost of the salvaged or refurbished material is below market value, use replacement cost to estimate the material value, otherwise use actual cost to the project.

4.C4 Recycled Content

Intent: Increase demand for building products that have incorporated recycled content material, reducing the impacts resulting from extraction of new material.

Requirement: Specify a minimum of 25% of building materials that contain in aggregate a minimum weighted average of 20% post-consumer recycled content material, OR, a minimum weighted average of 40% post-industrial recycled content material. **1**

Specify an additional 25% (50% total) of building materials that contain in aggregate, a minimum weighted average of 20% post consumer recycled content material, OR, a minimum weighted average of 40% post-industrial recycled content material. **1**

Technologies /Strategies: Specify building materials containing recycled content for a fraction of total building materials. Select products and materials with supporting information from the AIA Resource Guide or the EPA Environmentally Preferable Purchasing (EPP) Program. Common building materials and products with recycled content include; wall, partition, and ceiling materials and systems; insulation; tiles and carpets; cement, concrete, and reinforcing metals; structural and framing steel. For products/materials not listed, selection should be made on the basis of EPP criterion and/or:

- -- Toxicity;
- -- Embodied energy;
- -- Production use of water, energy and ozone depleting substances (ODSs);
- -- Production limits on toxic emissions and effluents;
- -- Minimal, reusable or recycled/recyclable packaging;
- -- Impact on indoor environmental quality (IEQ);
- -- Installation that limits generation of waste;
- -- Materials that limit waste generation over their life;
- -- EPA guideline compliance; and
- -- Harvested on a sustainable yield basis.

See the LEED Reference Guide for a summary of the EPA guidelines and calculation methodology guidelines. Determine percentages in terms of dollar value using the following steps:

1. Calculate total dollars (see exclusions) of the material that contain recycled content.
2. Calculate total dollars (see exclusions) of all building materials.
3. Divide Step 1 by Step 2 to determine the percentage.

Exclusions: Labor costs; all mechanical and electrical material and labor costs; project overhead and fees)

4.0 Materials and Resources (Continued)

4.C5 Local/Regional Materials

Intent: Increase demand for building products that are manufactured locally, reducing the environmental impacts resulting from transportation, and supporting the local economy.

Requirement: Specify a minimum of 20% of building materials that are manufactured regionally within a radius of 500 miles. **1**

Of these regionally manufactured materials, specify a minimum of 50% that are extracted, harvested, or recovered within 500 miles. **1**

Technologies /Strategies: Specify and install regionally extracted, harvested, and manufactured building materials. Contact the state and local waste management boards for information about regional building materials. See the LEED Reference Guide for calculation methodology guidelines. Determine percentages in terms of dollar value using the following steps:

1. Calculate total dollars (see exclusions) of material that is locally or regionally manufactured.
2. Calculate total dollars (see exclusions) of all building materials.
3. Divide Step 1 by Step 2 to determine the percentage.

Exclusions: Labor costs; all mechanical and electrical material and labor costs; project overhead and fees.

4.C6 Rapidly Renewable Materials

Intent: Reduce the use and depletion of finite raw and long cycle renewable materials by replacing them with rapidly renewable materials.

Requirement: Specify rapidly renewable building materials for 5% of total building materials. **1**

Technologies /Strategies: Rapidly renewable resources are those materials that substantially replenish them-selves faster than traditional extraction demand (e.g. planted and harvested in less than a 10 year cycle) and do not result in significant biodiversity loss, increase erosion, air quality impacts, and that are sustainably managed. See the LEED Reference Guide for calculation methodology guidelines. Determine percentages in terms of dollar value using the following steps:

1. Calculate total dollars (see exclusions) of materials that are considered to be rapidly renewable.
2. Calculate total dollars (see exclusions) of all building materials.
3. Divide Step 1 by Step 2 to determine the percentage.

Exclusions: Labor costs; all mechanical and electrical material and labor costs; project overhead and fees.

4.C7 Certified Wood

Intent: Encourage environmentally responsible forest management.

Requirement: Use a minimum of 50% of wood-based materials certified in accordance with the Forest Stewardship Council guidelines for wood building components including but not limited to framing, flooring, finishes, furnishings, and non-rented temporary construction applications such as bracing, concrete form work and pedestrian barriers. **1**

Technologies /Strategies: Refer to the Forest Stewardship Council guidelines for wood building components that qualify for compliance to the requirements and incorporate into material selection for the project.

5.0 Indoor Environmental Quality (IEQ) Score 17

5.R1 Minimum IAQ Performance **Reqd.**

Intent: Establish minimum IAQ performance to prevent the development of indoor air quality problems in buildings, maintaining the health and well being of the occupants.

Requirement: Meet the minimum requirements of voluntary consensus standard ASHRAE 62-1999, Ventilation for Acceptable Indoor Air Quality and approved Addenda.

Technologies /Strategies: Include proactive design details that will eliminate some of the common causes of indoor air quality problems in buildings. Introduce standards into the design process early. Incorporate references to targets in plans and specifications. Ensure ventilation system outdoor air capacity can meet standards in all modes of operation. Locate building outdoor air intakes (including operable windows) away from potential pollutants/contaminant sources such as sporulating plants (allergens), loading areas, building exhaust fans, cooling towers, sanitary vents, dumpsters, vehicular exhaust, and other sources. Include operational testing in the building commissioning report. Design cooling coil drain pans to ensure complete draining. Include measures to control and mitigate radon buildup in areas where it is prevalent.

5.R2 Environmental Tobacco Smoke (ETS) Control **Reqd.**

Intent: Prevent exposure of building occupants and systems to Environmental Tobacco Smoke (ETS).

Requirement: Zero exposure of nonsmokers to ETS by prohibition of smoking in the building, OR, by providing a designated smoking room designed to effectively contain, capture and remove ETS from the building. At a minimum, the smoking room shall be directly exhausted to the outdoors with no recirculation of ETS-containing air to the non-smoking area of the building, enclosed with impermeable structural deck-to-deck partitions and operated at a negative pressure compared with the surrounding spaces of at least 7 Pa (0.03 inches of water gauge). Performance of smoking rooms shall be verified using tracer gas testing methods as described in ASHRAE Standard 129-1997. Acceptable exposure in non-smoking areas is defined as less than 1% of the tracer gas concentration in the smoking room detectable in the adjoining non-smoking areas. Smoking room testing as described in the ASHRAE Standard 129-1997 is required in the contract documents and critical smoking facility systems testing results must be included in the building commissioning plan and report or as a separate document.

Technologies /Strategies: Prohibit smoking in the building and/or provide designated smoking areas outside the building in locations where ETS can not reenter the building or ventilation system and away from high building occupant or pedestrian traffic.

5.C1 IAQ Monitoring

Intent: Provide capacity for indoor air quality (IAQ) monitoring to sustain long term occupant health and comfort.

Requirement: Install a permanent carbon dioxide (CO2) monitoring system that provides feedback on space ventilation performance in a form that affords operational adjustments, AND specify initial operational set point parameters that maintain indoor carbon dioxide levels no higher than outdoor levels by more than 530 parts per million at any time. **1**

Technologies /Strategies: Install an independent system or make CO2 monitoring a function of the building automation system. Situate monitoring locations in areas of the building with high occupant densities and at the ends of the longest runs of the distribution ductwork. Specify that system operation manuals require calibration of all of the sensors per manufacturer recommendations but not less than one year. Include sensor and system operational testing and initial set point adjustment in the commissioning plan and report. Also consider periodic monitoring of carbon monoxide (CO), total volatile organic compounds (TVOCs), and particulates (including PM10).

5.0 Indoor Environmental Quality (IEQ) (Continued)

5.C2 Increase Ventilation Effectiveness

Intent: Provide for the effective delivery and mixing of fresh air to building occupants to support their health, safety, and comfort.

Requirement: For mechanically ventilated buildings, design ventilation systems that result in an air change effectiveness (E) greater than or equal to 0.9 as determined by ASHRAE 129-1997. For naturally ventilated spaces demonstrate a distribution and laminar flow pattern that involves not less than 90% of the room or zone area in the direction of air flow for at least 95% of hours of occupancy. **1**

Technologies /Strategies: Employ architectural and HVAC design strategies to increase ventilation effectiveness and prevent short-circuiting of airflow delivery. Techniques available include use of displacement ventilation, low velocity, and laminar flow ventilation (under floor or near floor delivery) and natural ventilation. Operable windows with an architectural strategy for natural ventilation, cross ventilation, or stack effect can be appropriate options with study of inlet areas and locations. See the LEED Reference Guide for compliance methodology guidelines.

5.C3 Construction IAQ Management Plan

Intent: Prevent indoor air quality problems resulting from the construction/renovation process, to sustain long term installer and occupant health and comfort.

Requirement: Develop and implement an Indoor Air Quality (IAQ) Management Plan for the construction and pre-occupancy phases of the building as follows:

During construction meet or exceed the minimum requirements of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guideline for Occupied Buildings under Construction, 1995, AND protect stored on-site or installed absorptive materials from moisture damage, AND replace all filtration media immediately prior to occupancy (Filtration media shall have a Minimum Efficiency Reporting Value (MERV) of 13 as deter-mined by ASHRAE 52.2-1999). **1**

Conduct a minimum two-week building flushout with new filtration media at 100% outside air after construction ends and prior to occupancy, OR, conduct a baseline indoor air quality testing procedure consistent with current EPA protocol for Environmental Requirements, Baseline IAQ and Materials, for the Research Triangle Park Campus, Section 01445. **1**

Technologies /Strategies: Specify containment control strategies including protecting the HVAC system, controlling pollutant sources, interrupting pathways for contamination, enforcing proper housekeeping and coordinating schedules to minimize disruption. Specify the construction sequencing to install absorptive materials after the prescribed dry or cure time of wet finishes to minimize adverse impacts on indoor air quality. Materials directly exposed to moisture through precipitation, plumbing leaks, or condensation from the HVAC system are susceptible to microbial contamination. Absorptive materials to protect and sequence installation include; insulation, carpeting, ceiling tiles, and gypsum products. Appoint an IEQ Manager with owner's authority to inspect IEQ problems and require mitigation as necessary.

5.C4 Low-Emitting Materials

Intent: Reduce the quantity of indoor air contaminants that are odorous or potentially irritating to provide installer and occupant health and comfort.

Requirement: Meet or exceed VOC limits for adhesives, sealants, paints, composite wood products, and carpet systems as follows:

- Adhesives must meet or exceed the VOC limits of South Coast Air Quality Management District Rule #1168 by, AND all sealants used as a filler must meet or exceed Bay Area Air Resources Board Reg. 8, Rule 51 **1**
- Paints and coatings must meet or exceed the VOC and chemical component limits of Green Seal requirements. **1**
- Carpet systems must meet or exceed the Carpet and Rug Institute Green Label Indoor Air Quality Test Program. **1**
- Composite wood or agrifiber products must contain no added urea-formaldehyde resins. **1**

Technologies /Strategies: Evaluate and preferentially specify materials that are low emitting, non-irritating, nontoxic and chemically inert. Request and evaluate emissions test data from manufacturers for comparative products. Ensure that VOC limits are clearly stated in specifications, in General Conditions, or in each section where adhesives, sealants, coatings, carpets, and composite woods are addressed.

5.0 Indoor Environmental Quality (IEQ) (Continued)

5.C5 Indoor Chemical and Pollutant Source Control

Intent: Avoid exposure of building occupants to potentially hazardous chemicals that adversely impact air quality.

Requirement: Design to minimize cross-contamination of regularly occupied areas by chemical pollutants: **1**

Employ permanent entryway systems (grills, grates, etc.) to capture dirt, particulates, etc. from entering the building at all high volume entryways, AND provide areas with structural deck to deck partitions with separate outside exhausting, no air recirculation and negative pressure where chemical use occurs (including housekeeping areas and copying/print rooms), AND provide drains plumbed for appropriate disposal of liquid waste in spaces where water and chemical concentrate mixing occurs.

Technologies /Strategies: Design to physically isolate activities associated with chemical contaminants from other locations in the building, providing dedicated systems to contain and remove chemical pollutants from source emitters at source locations. Applicable measures include eliminating or isolating high hazard areas; designing all housekeeping chemical storage and mixing areas (central storage facilities and janitors closets) to allow for secure product storage; designing copy/fax/printer/printing rooms with structural deck to deck partitions and dedicated exhaust ventilation systems; and including permanent architectural entryway system(s) to catch and hold particles to keep them from entering and contaminating the building interior. Consider utilization of EPA registered anti-microbial treatments in carpet, textile or vinyl wall coverings, ceiling tiles or paints where microbial contamination is a concern. Utilize “breathable” wall finishes where circumstances require, to reduce moisture build-up and prevent microbial contamination. Minimize selection of fibrous materials, e.g. insulation, carpet and padding and flexible fabrics, whose
exposed surfaces when exposed to the air stream or occupied space can contribute significant emissions and absorb and re-emit other contaminants over time.

5.C6 Controllability of Systems

Intent: Provide a high level of individual occupant control of thermal, ventilation, and lighting systems to support optimum health, productivity, and comfort conditions.

Requirement: Provide a minimum of one operable window and one lighting control zone per 200 s.f. for all occupied areas within 15 feet of the perimeter wall. **1**

Provide controls for each individual for airflow, temperature, and lighting for 50% of the non perimeter, regularly occupied areas. **1**

Technologies /Strategies: Provide individual or integrated controls systems that control lighting, airflow, and temperature in individual rooms and/or work areas. Consider combinations of ambient and task lighting control and operable windows for perimeter and VAV systems for non perimeter with a 1:1: 2 terminal box to controller to occupant ratio.

5.C7 Thermal Comfort

Intent: Provide for a thermally comfortable environment that supports the productive and healthy performance of the building occupants.

Requirement: Comply with ASHRAE Standard 55-1992, Addenda 1995 for thermal comfort standards including humidity control within established ranges per climate zone. **1**

Install a permanent temperature and humidity monitoring system configured to provide operators control over thermal comfort performance and effectiveness of humidification and/or dehumidification systems in the building. **1**

Technologies /Strategies: Integrated envelope and HVAC system design strategies that achieve thermal comfort conditions based on mean radiant temperature, local air velocity, relative humidity, and air temperature. Install and maintain a temperature and humidity monitoring system for key areas of the building (i.e., at the perimeter, and spaces provided with humidity control). This function can be satisfied by the building automation system. Specify in system operation manuals that all sensors require quarterly calibration. Include criteria verification and system operation in commissioning plan and report.

5.0 Indoor Environmental Quality (IEQ) (Continued)

5.C8 Daylight and Views

Intent:	Provide a connection between indoor spaces and the outdoor environment through the introduction of sunlight and views into the occupied areas of the building.	
Requirement:	Achieve a minimum Daylight Factor of 2% (excluding all direct sunlight penetration) in 75% of all space occupied for critical visual tasks, not including copy rooms, storage areas, mechanical, laundry, and other low occupancy support areas. Exceptions include those spaces where tasks would be hindered by the use of daylight or where accomplishing the specific tasks within a space would be enhanced by the direct penetration of sunlight.	**1**
	Direct line of sight to vision glazing from 90% of all regularly occupied spaces, not including copy rooms, storage areas, mechanical, laundry, and other low occupancy support areas.	**1**
Technologies /Strategies:	Implement design strategies to provide access to daylight and views to the outdoors in a glare-free way using exterior sun shading, interior light shelves, and /or window treatments. Orient buildings to maximize daylighting options. Consider shallow or narrow building footprints. Employ courtyards, atriums, clerestory windows, skylights, and light shelves to achieve daylight penetration (from other than direct effect or direct rays from the sun) deep into regularly occupied areas of the building.	

5.C9 Acoustic Environment /Noise Control

Intent:	Provide appropriate **acoustic conditions** for user privacy and comfort.	
Requirement:	Minimize environmental noise through appropriate use of insulation, sound-absorbing materials and noise source isolation.	**1**
Technologies /Strategies:	Evaluate each occupied environment and determine the appropriate layout, materials and furnishings design.	

5.C10 Facility In-Use IAQ Management Plan

Intent:	Insure the effective management of facility air quality during its life.	
Requirement:	Perform all of the following: • Develop an air quality action plan to include scheduled HVAC system cleaning. • Develop an air quality action plan to include education of occupants and facility managers on indoor pollutants and their roles in preventing them. • Develop an air quality action plan to include permanent monitoring of supply and return air, and ambient air at the fresh air intake, for carbon monoxide (CO), carbon dioxide (CO 2), total volatile organic compounds (TVOCs), and particulates (including PM10).	**1**
Technologies /Strategies:	Provide action plan for periodic system maintenance, monitoring, occupant/manager training.	

6.0 Facility Delivery Process — Score 7

6.C1 Holistic Delivery of Facility

Intent:	Deliver a facility that optimizes tradeoffs among sustainability, first costs, life cycle costs and mission requirements.	
Requirement:	Choose team leaders that are experienced in holistic delivery of facilities.	**1**
	Train the entire team in the holistic delivery process. The team must include all stakeholders in the facility delivery, including the users, the contracting staff, the construction representatives, project manager, and design/engineering team members.	**1**
	Identify project goals and metrics.	**1**
	Plan and execute charrettes with team members at critical phases of the facility delivery.	**1**
	Identify and resolve tradeoffs among sustainability, first costs, life cycle costs and mission requirements through charrettes and other collaborative processes.	**2**
	Document required results for each phase of project deliverables that achieve the project goals and are measurable throughout the facility life span.	**1**
Technologies /Strategies:	Develop performance specifications or choose competitive range of products that meet environmental criteria.	
	Use automated modeling and analysis tools to assess site and facility design alternatives.	
	Conduct life-cycle cost analysis (LCCA) in the design process to reduce energy and water consumption.	
	Conduct a full ecological assessment to include soil quality, water resources and flows, vegetation and trees, wildlife habitats and corridors, wetlands, and ecologically sensitive areas to identify the least sensitive site areas for development. Evaluate space utilization/functions to reduce overall space requirements, considering networking, flextime, flexi-place, dual-use, and other strategies to reduce space requirements/optimize facility size.	
	Commission all facility systems to ensure proper performance as designed.	

7.0 Current Mission — Score 6

7.C1 Operation and Maintenance

Intent: Assure that the delivery process assures efficient operation and maintenance of the facility.

Requirement: Develop a facility operations and maintenance program to include: **2**

Commissioning instructions for all facility systems.

- Comprehensive facility operations and maintenance instructions for system operation, performance verification procedures and results, an equipment inventory, warrantee information, and recommended maintenance schedule. The instructions should include a comprehensive, preventive maintenance program to keep all facility systems functioning as designed.
- A periodic training program for occupants, facilities managers, and maintenance staff in all facility operations and maintenance activities.
- Instructions on sustainable cleaning and pest control practices.
- Develop a comprehensive site/facility recycling/waste management plan.

Provide surfaces, furnishings, and equipment that are appropriately durable, according to life cycle cost analysis. **1**

Technologies /Strategies: Maintain facility elements, systems and subsystems on a routine maintenance schedule to ensure integrity and longevity.

Perform scheduled cleaning and maintenance activities with nontoxic environmentally preferable cleaning products and procedures. Keep air ducts clean and free of microorganisms through a structured program of preventive maintenance. Clean lighting systems following a regular maintenance schedule to ensure optimum light output and energy efficiency.

Use pesticides and herbicides sparingly and only when necessary with preference to natural methods and materials over poisons and toxic agents.

Use automated monitors and controls for energy, water, waste, temperature, moisture, and ventilation monitors and controls. Turn off the lights, computers, computer monitors, and equipment when not in use. Enable power-down features on office equipment.

7.C2 Design for Soldier and Workforce Productivity and Retention

Intent: Provide a high-quality, functional, healthy and safe work environment to promote soldier and workforce productivity and retention.

Requirement: Provide a high quality indoor environment to enhance user/occupant quality of life (QOL). **1**

Provide a highly functional work environment to promote user/occupant work productivity. **1**

Provide a healthy and safe work environment to sustain QOL and productivity. **1**

Technologies /Strategies: Use a ASID-qualified designer to provide stimulating interior environments with pleasant colors, surface treatments, room proportions and ceiling heights, external views, natural lighting, and quality detailing for interior furnishings, equipment, materials and finishes. Use IES standards to provide light to occupied space with variations in level, comfortable contrasts, natural color rendition, natural/man-made, and adequate controls to optimize light aesthetic qualities. Provide occupant control of individual work areas configuration, and lighting, thermal and ventilation systems.

Collaborate with end users to identify functional and technical requirements and to perform adjacency studies. Configure occupied space to address the specific workers/occupants functions and activities that will be carried out there. Meet AEI guide requirements. Design and configure occupied space, and select furniture and equipment using human ergonomics. Identify existing user amenities, such as dining, recreation, socialization, shopping and child care facilities. Identify what amenities should be incorporated into the project or provided in t

Identify existing user amenities, such as dining, recreation, socialization, shopping and child care facilities. Identify what amenities should be incorporated into the project or provided in a future, nearby facility. Provide environmental noise control through the appropriate use of insulation, sound-absorbing materials and noise source. Provide ventilation air in sufficient volume free from natural and man made contaminants. Limit humidity to a range that minimizes mold growth and promotes respiratory health.

8.0 Future Missions — Score 4

8.C1 Assess the Lifespans of the Designed Use and Supporting Systems

Intent: Understand the typical or likely lifespan of the function to be accommodated by the facility in order to recognize how soon the facility should be expected to adapt to a different use. Also, understand the lifespans of the various building systems to understand when they will need to be updated during the lifespan of the facility and to design the facility in a manner that facilitates the updating of each system.

Requirement:	Identify how long the designed function is likely to occupy the current facility.	**1**
	Identify how long the envelope, structure, HVAC, plumbing, communications, electrical, and other systems are likely to last before requiring replacement or upgrade. Consider economic, functional and physical obsolescence.	**1**
Technologies /Strategies:	Consider the life span of the weapon systems, doctrines, or other programs supported by the facility.	
	Use life cycle data and other sources to identify the life span of the embodied systems.	

8.C2 Design for Adaptation, Renewal and Future Uses

Intent: Explicitly design the facility to maximize accommodation of future uses. The greater the future flexibility, the less likely is the facility to be a source for waste materials or to require additional materials.

Requirement:	Identify possible future uses for the facility, consider alternatives that expand the list of possible future uses. AND Design the building to accommodate as wide a range of future uses, as practical. AND Design the installation of building systems to accommodate foreseeable change with a minimum amount of disruption, cost, and additional materials.	**1**
	Build the smallest facility necessary to meet current mission functional requirements, using the most efficient shape and form, while taking into consideration expansion capabilities and potential future mission requirements. AND Design the facility for recycling of materials and systems.	**1**
Technologies /Strategies:	Create durable, long-lasting and adaptable facility shell and structural system. Create an adaptable, flexible facility design using open planning, service corridors, interstitial space, access floors, demountable walls/partitions and other adaptable space configuration/utilization strategies.	
	Select materials that are recyclable, avoiding composite materials, such as reinforced plastics and carpet fibers and backing. Consider selecting materials and labeling construction materials with identification information to facilitate recycling. Use pre-cut/pre-fabricated materials and use standard lengths and sizes (dimensional modularity) in design. Design facility systems and subsystems for reconfiguration and/or disassembly/recycling using reversible/reusable connectors.	

Facility Points Summary

1.0	Sustainable Sites (S)	Score
1.R1 *	Erosion, Sedimentation and Water Quality Control [Required]	
1.C1 *	Site Selection [2 Points Maximum]	
1.C2 *	Installation Redevelopment [2 Points Maximum]	
1.C3 *	Brownfield Redevelopment [1 Point Maximum]	
1.C4 *	Alternative Transportation [4 Points Maximum]	
1.C5	Reduced Site Disturbance [2 Points Maximum]	
1.C6 *	Stormwater Management [2 Points Maximum]	
1.C7	Landscape and Exterior Design to Reduce Heat Islands [2 Points Maximum]	
1.C8	Light Pollution Reduction [1 Point Maximum]	
1.C9 **	Optimize Site Features [1 Point Maximum]	
1.C10 **	Facility Impact [2 Points Maximum]	
1.C11 **	Site Ecology [1 Point Maximum]	

2.0	Water Efficiency (W)	Score
2.C1 *	Water Efficient Landscaping [2 Points Maximum]	
2.C2	Innovative Wastewater Technologies [1 Point Maximum]	
2.C3 *	Water Use Reduction [2 Points Maximum]	

3.0	Energy and Atmosphere (E)	Score
3.R1 *	Fundamental Building Systems Commissioning [Required]	
3.R2 *	Minimum Energy Performance [Required]	
3.R3	CFC Reduction in HVAC&R Equipment [Required]	
3.C1 *	Optimize Energy Performance [3 Points Maximum]	
3.C2	Renewable Energy [3 Points Maximum]	
3.C3	Additional Commissioning [1 Point Maximum]	
3.C4	Elimination of HCFC's and Halons [1 Point Maximum]	
3.C5 *	Measurement and Verification [1 Point Maximum]	
3.C6	Green Power [1 Point Maximum]	
3.C7 **	Distributed Generation [1 Point Maximum]	

4.0	Materials and Resources (M)	Score
4.R1 *	Storage & Collection of Recyclables [Required]	
4.C1	Building Reuse [3 Points Maximum]	
4.C2 *	Construction Waste Management [2 Points Maximum]	
4.C3	Resource Reuse [2 Points Maximum]	
4.C4 *	Recycled Content [2 Points Maximum]	
4.C5	Local/Regional Materials [2 Points Maximum]	
4.C6	Rapidly Renewable Materials [1 Point Maximum]	
4.C7	Certified Wood [1 Point Maximum]	

5.0	Indoor Environmental Quality (IEQ) [Q]	Score
5.R1 *	Minimum IAQ Performance [Required]	
5.R2	Environmental Tobacco Smoke (ETS) Control [Required]	
5.C1 *	IAQ Monitoring [1 Point Maximum]	
5.C2	Increase Ventilation Effectiveness [1 Point Maximum]	
5.C3	Construction IAQ Management Plan [2 Points Maximum]	
5.C4	Low-Emitting Materials [4 Points Maximum]	
5.C5 *	Indoor Chemical and Pollutant Source Control [1 Point Maximum]	
5.C6	Controllability of Systems [2 Points Maximum]	
5.C7	Thermal Comfort [2 Points Maximum]	
5.C8	Daylight and Views [2 Points Maximum]	
5.C9 **	Acoustic Environment /Noise Control [1 Point Maximum]	
5.C10 **	Facility In-Use IAQ Management Plan [1 Point Maximum]	

Facility Points Summary (Continued)

6.0	**Facility Delivery Process (P)**	**Score**
6.C1 **	Holistic Delivery of Facility [7 Points Maximum]	
7.0	**Current Mission**	**Score**
7.C1 **	Operation and Maintenance [3 Points Maximum]	
7.C2 **	Design for Soldier and Workforce Productivity and Retention [3 Points Maximum]	
8.0	**Future Missions**	**Score**
8.C1 **	Assess the Lifespans of the Designed Use and Supporting Systems [2 Points Maximum]	
8.C2 **	Design for Adaptation, Renewal and Future Uses [2 Points Maximum]	

Total Score

SPRT Sustainable Project Certification Levels

25 to 34 Points - SPRT Bronze

35 to 49 Points - SPRT Silver

50 to 74 Points - SPRT Gold

75 to 100 Points - SPRT Platinum

SPRT Comment Sheet

Please forward any comments that you may have on this Sustainable Project Rating Tool, preferably by Email, to:

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SPRT Para.